



Newsletter of the Arizona Geographic Information Council

GIS On Call: Mapping Emergencies at a Moment's Notice

Marlene Shields

Life Line Ambulance Co.

Editor's Note: The Incident Command System (ICS) is a national emergency management system that's used to handle all kinds of crises, from fires to earthquakes to floods and more. It starts with the Federal government and branches down to the local level. It is designed to be very flexible and allows people to be called in from any part of the country. Part of its mission includes emergency mapping on location, which requires calling up specially certified GIS professionals. What follows is the personal experience of one such professional.

Going on assignment in the Incident Command System as a Geographic Information Systems Technician brings with it many responsibilities as well as rewards.

I work full time for an ambulance company, managing the GIS used for computer-aided dispatch, and providing maps for the crews. The people are great! My job provides me the flexibility of going on GIS assignments dispatched through the National Interagency Coordination Center. I make myself available in the Resource Ordering and Status System, referred to as ROSS. I became interested in Incident GIS when I volunteered for GIS/GPS support on the American Frontiers Trek, in the summer of 2002.

The Incident Command System is an interagency on-scene management structure. Considerable emphasis is placed on developing effective Incident

Action Plans (IAP). They contain general objectives, and reflect the overall strategy for managing the incident. The IAP includes the identification of operational resources and assignments, and is structured around a 24-hour timeframe called an Operational Period.

Some of the products produced by the GIS technician include the Incident Action Plan Map, Incident Briefing Map, Aviation Map, Situation/Plans Map, Transportation Map, Progression Map, Ownership Map, Structural Protection Map, Infrared Intelligence Map, Damage Assessment Map, Rehabilitation Map, and Facilities Map. The IAP Map is the primary map used by operations personnel in completion of their mission and is a supplement to the Incident Action Plan. The objective is to effectively communicate geographic feature relationships and incident management objectives. The operations staff uses this map as a tool to show field assignments, crew instructions and division concerns at the shift briefings and breakout meetings. Infrared interpreters are on hand to produce a fire perimeter for each day's map and reports. You may have a field observer GPS the fire line from a helicopter, or if you're real lucky, you may get to fly the fire line yourself! However you get the fire perimeter, you need to calculate the acreage for the Plans Section Chief to put on the 209 report. This a comprehensive report for the incident that is due by 16:00.

As a GIST on assignment with the ICS, you have certain responsibilities. First off, when dispatch

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GIS On Call

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contacts you, be ready. You may have to leave the next day or even within a few hours. Circumstances dictate just how soon you will go. Of course you have to travel and find your destination. The dispatch center arranges where you'll go and how you'll get there. When you arrive, you need to find the Situation Unit Leader, and identify the desired objectives & goals. The GISTs work in the Plans Section under the Situation Unit Leader. Check-in is required, as well as check-out when you leave. You may be asked to take the second shift, which starts at midnight and ends at noon. Or you may need to work a 16-hour shift starting whenever they need you. Each day has two briefings that you need to prepare maps for. You may also be asked to do special maps for public meetings. Depending on which agency you go out with, and your geographic location, you may or may not have a shower every day. You will be very lucky to sleep in a bed. You are required to take your own tent and other essentials, if you are dispatched to a fire.

The minimum assignment for a fire is two weeks. The maximum you can work is 30 days with a day off every so often. FEMA always wants me to stay 30 days.

When you fly, they purchase the ticket. If a fire is local you may travel with a crew in a vehicle. If you stay in Fire Camp, you sleep in a tent or whatever, and your meals are provided. It all depends on the situation. You get paid at the rate at which you are certified.

I have been on some interesting assignments. I

spent the month of April 2003 in east Texas on the Shuttle disaster. I must say it was very fulfilling to be part of the GIS team. The astronauts and engineers, who were working to recover the Shuttle, were very appreciative of our efforts. The astronauts expressed astonishment at the visualization of geographic locations of debris. I also found it very fulfilling to provide GIS maps on the Taylor Complex Fire in Tok, Alaska in July 2004. The village was being threatened by the Porcupine Fire the day I arrived, and they needed maps for the public meeting. The people were very scared, and the maps were used by the fire management officers to illustrate the attack plans. I also had the opportunity to provide maps for the Katrina disaster in Alabama this past October. The people at the FEMA office worked hard, and were concerned about the people they were trying to find quarters for. It's just amazing how much you can learn about the local culture, by collecting data to create a map of the area.

Going on assignment with the ICS as a GIS technician is a demanding and regimented environment. It requires a high degree of responsiveness for extended periods of time, often in primitive surroundings. You may indeed be making maps with your laptop on "a rock out back." On the other side of the coin, it is extremely rewarding and gratifying to be a part of the team. The people are great! ♦

See page 4 for information on becoming certified.

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*Previous issues of Surface Matters
are available on the AGIC web site.*

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Surface Matters is the quarterly newsletter of the Arizona Geographic Information Council. It is written for those who want to stay in touch with the vision and activities of AGIC and with the continuing growth of GIS in Arizona.

Your comments about this publication are always welcome. Please send all correspondence to the editor.

Readers are invited to submit articles that they wish to be considered for publication. The author retains all copyrights. Please let the editor know if the article has been published elsewhere.

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GIS at ASU (and ASU East and ASU West)

Okay, this is going to take some explaining. Arizona State University is an expansive entity, both academically and geographically. Three of its campuses offer GIS courses. Each campus will be discussed separately.

Courses

ASU Tempe: Geospatial technology is applied in many disciplines here, including the physical sciences, engineering, planning, geography, social science, and business. Courses in GIS, however, are taught only by the Geography Department, which also offers classes in remote sensing and air photo interpretation. Asking specifically about "GIS classes," though, will garner different answers from different people, because several classes offer combinations of spatial analysis techniques, software, programming, or spatial concepts. It's better to ask about courses in the geospatial realm and pick the ones that meet your needs. It should be noted that the Department of Geology offers remote sensing classes as well.

Students working on assignments have a few different locations to do them. The Department of Geography has two computer labs for undergraduates and one for graduate students. Some GIS software is also available in the Computer Commons. For students outside of geography, the School of Planning and the School of Life Sciences both have labs for graduate students that feature geospatial software.

ASU Polytechnic: For most of its life this campus in Mesa has been known as ASU East. Recently the name ASU Polytechnic was adopted to reflect its focus on applied sciences.

At present the Polytechnic campus offers one GIS class and one remote sensing class for undergraduate students. They are given by the Department of Applied Biological Sciences, which is in the East College. Both are upper-division introductory courses. Three other classes actively use GIS as part of their lessons but the classes are not primarily focused on GIS as such. At the graduate level is a class in spatial modeling and a more advanced class in remote sensing.

One computer lab is available for the GIS students. It is used for teaching but is open for general use when not being used for instruction. The Computer Commons facilities also have GIS software. In addition, several professors apply GIS in their own research, so other computers on the campus have access to GIS software for research purposes.

ASU West: This campus in Glendale offers one upper-division undergraduate course in GIS, through the Department of Social and Behavioral Sciences. It is taught each semester, but only on Friday mornings in one 3.5-hour stretch. It is a four-credit lecture and lab

class. The course number on this campus is GCU 373, while the same course on the Tempe campus is GPH 373. In Tempe the class is stretched across the week rather than compressed into a single day.

The class is taught in the computer lab where students also do their assignments. When class is not in session, the lab is available 24 hours per day. The campus computer center, called Technopolis, also has the appropriate software to complete the coursework.

Academic Programs

ASU Tempe: If you're looking for options, this is the place to be. An enumeration is in order.

Undergraduate – One can minor in GIS or get an undergraduate GIS certificate. The certificate requires 19 credits of specified courses and is available only to those who are otherwise pursuing a degree (in any field). Geography majors can pursue a Bachelor's degree with a GIS emphasis; requirements for the certificate still apply.

Graduate – This parallels the undergraduate program. A graduate GIS certificate is available to students who are enrolled in any degree program, provided they complete the required credits.

GIS Master's – This is a new program designed for working adults. Called the Master of Advanced Study in Geographic Information Systems, it is a 12-month, non-thesis degree with classes that meet at night and on weekends. Be forewarned, though: classes are three hours per night, five nights per week. It is a curriculum for hardy souls, not to be embarked upon lightly.

ASU Polytechnic, ASU West: Degrees are not duplicated on the different campuses, so these locations don't offer programs centered on GIS. The courses they offer can be used toward a degree being pursued on the Tempe campus.

Work Experience

For students who would like to gain practical experience with geospatial technology, internships, on-campus jobs and off-campus jobs are available.

ASU Tempe: The Geography Department has its own internship program, through which a student can earn up to six credits. Students must work three hours per week per credit, so a typical 3-credit internship would require nine hours of work per week. Those signed up for the credits must also take a related class, which meets for three weeks at the beginning of the semester and one week at the end. Interns are typically employed off campus at a government office or sometimes at a private business.

Student jobs, whether taken as internships or not, are available for both graduate and undergraduate students. On-campus jobs come through three venues: at the GIServices lab, through individual faculty who are conducting research, or at one of several on-campus research institutes.

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GIS at ASU

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When jobs or internships become available they are announced through the Undergraduate Geography Majors listserve, through the GIS listserve, and on the Geography Department jobs web site.

ASU Polytechnic: No formal internship program exists here as it does on the Tempe campus, but the different college departments have faculty or staff who act as internship coordinators. Internships become available on an as-needed basis. Similarly, on-campus jobs as research assistants or hourly employees arise when the need occurs. Such opportunities are posted on departmental bulletin boards and sent through the GIS listserve.

ASU West: As with the Polytechnic campus, ASU West has internship coordinators in the various colleges but there is no formal program. Because this campus has only one GIS instructor, on-campus jobs are rare, though students are sometimes hired as research assistants when the need arises.

Students seeking a robust GIS education will have to attend the Tempe campus. Geospatial technology, however, is constantly being applied to new fields and applications. ASU recognizes this and is incorporating geospatial education into its programs of study across all of its campus locations.

Further information

ASU Home: www.asu.edu
Admissions: www.asu.edu/apply
Geography Department: geography.asu.edu
Geography Jobs Board: geography.asu.edu/jobs
Career Services: www.asu.edu/studentaffairs/career

Polytechnic Campus: www.poly.asu.edu
Dept. of Applied Biological Sciences:
www.poly.asu.edu/ecollege/appliedbiologicalsciences
Career Services: www.poly.asu.edu/students/career

West Campus: www.west.asu.edu
Dept. of Social & Behavioral Sciences:
www.west.asu.edu/sbs
Career Services: www.west.asu.edu/sa/cspc

Geography Internship Coordinator
Barbara Trapido-Lurie, ASU Tempe
Department of Geography

Types of organizations that hire GIS interns

Federal and state agencies
City planning and GIS departments
Aerial photo companies
Real estate companies
ASU Department of Geography – on specific projects
Various ASU research institutes ♦



The Taylor Complex Fire in Tok, Alaska, 2004

GIS On Call – Certification

Becoming certified as an emergency GIS technician requires that you earn a Red Card through a sponsoring agency, which in turn requires specialized training. Basic information can be found here: www.azwildfireacademy.org/red_card_info.htm

GIS technicians aren't required to take the physical test for firefighters, but it's a good idea to be in shape. Emergency field work can require a lot of hiking, while fire camps can be hot and physically stressful.

Other sites of interest:

National Incident Management System – the parent organization of the Incident Command System
www.fema.gov/nims

National Interagency Coordination Center
www.fire.blm.gov/FactSheets/NICC.pdf



Recovered debris from the Space Shuttle *Columbia*

Education Conference to Feature GIS Presentations

Shea Lemar

GIS Services, ASU

GIS in K-12 education is one of the main foci at Arizona State University's annual Microcomputers in Education Conference. About two dozen people from across the nation will be giving presentations on the use of GIS in the classroom. The list of presenters includes K-12 teachers, university professors, international authors, GIS professionals and more.

There will be two rooms dedicated to GIS presentations, one for hands-on workshops and one for traditional presentations. Charlie Fitzpatrick, coordinator of ESRI's K-12 program, is one of the conference's featured presenters and will be speaking about spatial literacy and GIS in schools.

In a continuing effort to support GIS education throughout the state, AGIC sponsored a \$1500.00 scholarship fund to help ten Arizona teachers attend MEC. In the application process they discussed how the use of GIS would impact their teaching.

The conference will be held March 11-13 at ASU's Tempe campus. For more information concerning the conference, please contact Shea Lemar at shea.lemar@asu.edu or visit the MEC website at <http://mec.asu.edu/mec> ♦

Eyes in the Sky Student Showcase

In the June 2005 issue we introduced you to the *Eyes in the Sky* program. In the program, which spans 18 months, teachers take a 12-week course to learn the fundamentals of geospatial technologies (GIS, GPS, image analysis). They then go through a 2-week seminar learning to teach these principles and apply them in the classroom. Finally, they spend two semesters incorporating this knowledge into their lessons. The project ends with a showcase in which the students of these teachers make maps or give presentations on the work they've accomplished as a result of the program.

The latest showcase will take place on April 29 at Tempe High School. Some students will explain their projects with map displays, while others will give audiovisual presentations. *Surface Matters* will report on this showcase in the next issue.

Date: April 29, 2005

Time: 9:00 AM – 1:00 PM

Place: Tempe High School, 1730 S. Mill Avenue

This event is free and open to the public.

For information about *Eyes in the Sky*, see <http://eyesinthesky.terc.edu> ♦

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All photos courtesy of Marlene Shields.



AGIC Roundup

- In the February meeting of the AGIC Board, the presidential gavel was passed from Tim Smothers to Rick Harrington, who will serve as AGIC President for the next year. Mr. Harrington is with the Pima County Regional Flood Control District and has been active with AGIC for many years.
- The AGIC Board met in January to discuss the 2006 AGIC work plan. The plan is a set of projects and goals that AGIC will pursue during the coming year. Its main focus points will be incorporated into the next edition of *Mapping Arizona*.
- The State Cartographer's Office (SCO) has established its own work plan for 2006. This work plan will be made to complement that of AGIC for more efficient project planning.
- Work on the Arizona Height Modernization project will be moved from the Data Resources Committee to the State Cartographer's Office. The project has grown beyond the resources of AGIC and will be more effectively pursued under the purview of the SCO.
- Arizona has received \$500,000 from Congress for the Height Modernization project for 2006. The State Cartographer's Office and the representative from the National Geodetic Survey are putting together an advisory group to establish spending priorities and to develop a process that reflects the interests of both the public and private sectors.
- The Outreach Working Group will explore the possibility of establishing teleconferencing capabilities for future AGIC Board meetings. This will enable board members from outside of Maricopa County to participate more easily in the meetings.



Calendar of Events

MICROCOMPUTERS IN EDUCATION CONFERENCE

MARCH 11-13, 2006

ARIZONA STATE UNIVERSITY, TEMPE CAMPUS

[HTTP://MEC.ASU.EDU/MEC](http://mec.asu.edu/mec)

ARIZONA PROFESSIONAL LAND SURVEYORS ANNUAL CONFERENCE AND GOLF TOURNAMENT

MARCH 23-25, 2006

TUCSON CONVENTION CENTER

260 S. CHURCH AVE., TUCSON, AZ

[HTTP://WWW.AZPLS.ORG](http://www.azpls.org)

NORTHERN ARIZONA GIS USER GROUP AND SWUG COORDINATION MEETING

APRIL 6, 2006

NAGIS MEETING 9:00 AM – 12:00 NOON

SWUG MEETING 1:30

PRESCOTT GATEWAY MALL COMMUNITY ROOM

PRESCOTT, AZ

CONTACT: AARON SEIFERT, [ASEIFERT@SWIAZ.COM](mailto:aseifert@swiaz.com)

[HTTP://GROUPS.YAHOO.COM/GROUP/NAGIS_USERS](http://groups.yahoo.com/group/NAGIS_USERS)

EYES IN THE SKY STUDENT GIS SHOWCASE

APRIL 29, 2006

9:00 AM – 1:00 PM

TEMPE HIGH SCHOOL

1730 S. MILL AVENUE, TEMPE, AZ

AGIC QUARTERLY BOARD MEETING

MAY 4, 2006

10:00 AM

LOCATION TO BE ANNOUNCED

[HTTP://AGIC.AZ.GOV/BOARD/MEETINGS.HTM](http://agic.az.gov/board/meetings.htm)